214. Proposed by R. D. CARMICHAEL, Hartselle, Ala.

Prove that $\pi^2=6.\frac{2^2}{2^2-1}.\frac{3^2}{3^2-1}.\frac{5^2}{5^2-1}$ .... where the squared numbers in the numerator are the natural *primes* in order.

GEOMETRY.

277. Proposed by G. W. GREENWOOD, M. A., McKendree College, Lebanon, Ill.

It is tacitly assumed in elementary geometry that as the number of sides of a regular polygon inscribed in a circle is increased, *in any manner*, that its perimeter has a fixed limit. Beginning with a square and then continually doubling the number of sides we get for the perimeter $2^{n+2}\sqrt{[2-E^n(0)]}$, where $E(x)\equiv\sqrt{(2+x)}$. Beginning with a hexagon we get $2^{m+1}3\sqrt{[2-E^m(1)]}$. The definition of the length of a circle assumes that these expressions have the same limit as $n\doteq\infty$ and $m\doteq\infty$. Prove it.

278. Proposed by L. E. NEWCOMB, Los Gatos, Cal.

AF, *MN* are parallel lines indefinitely extended toward *FN*; at right angles to *AF*, *MN* is *AM* of length 22; upon the base *AB*, which is in line with *AM*, is the triangle *ABC* whose sides are $AB=21$, $BC=10$, $AC=17$; find the sides of the maximum similar triangle with base extending from *B* to some point in *AF*, the vertex in line with *MN*.

279. Proposed by C. C. WENTWORTH, C. E., Roanoke, Va.

To construct geometrically the maximum equilateral triangle circumscribed about a given triangle.

GROUP THEORY.

12. Proposed by GEORGE H. HALLETT, Ph. D., Assistant Professor of Mathematics, The University of Pennsylvania.

*Given $U_1=\alpha'$, $V_1=\beta'$, and the recursion formulae $U_y=\alpha' V_{y-1}+\alpha'' U_{y-1}$, $V_y=\beta' V_{y-1}+\beta'' U_{y-1}$. Find expressions for U_y, V_y in terms of the coefficients α', α'', β', β''.

13. Proposed by O. E. GLENN, Ph. D., Springfield, Mo.

The order of the linear homogeneous group in n letters is $(p^n-1)(p^n-p)$ ....(p^n-p^{n-1}). Two proofs are given in Burnside's *Finite Groups*. Give other proofs.

*The problem is of frequent occurrence in abstract group construction.